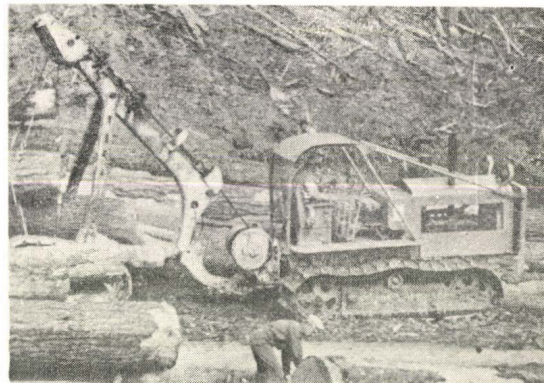
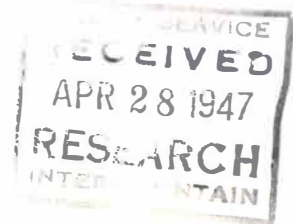


# NORTHEASTERN LOGGERS' HANDBOOK

by

Fred C. Simmons  
PRELIMINARY REVIEW EDITION



*Easier and Safer Work*



*Greater Production (more pay) and Better Living Conditions*

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## SECTION 13:— CABLE SKIDDING

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NORTHEASTERN FOREST  
EXPERIMENT STATION



United States Department of Agriculture

FOREST SERVICE  
NORTHEASTERN FOREST EXPERIMENT STATION

614 Bankers Securities Building  
Philadelphia 7, Pennsylvania

V. L. HARPER, DIRECTOR

FOREST UTILIZATION SERVICE  
James C. Rettie, Chief

If you want to be a mechanic, you will easily find plenty of good books which will tell you what you need to know. You will also find plenty of instructors and training shops.

What about the young man who wants to make his living by logging? For him there is no good source of information to which he can turn. The books and courses on logging are for the logging engineers--not for the fellow who uses the axe and crosscut.

Why shouldn't there be a simple illustrated handbook which will tell the young woodsman (or the green woodsman) what he needs to know about the care and use of his tools and the best of the old and the new techniques of, and devices for logging? He needs to know the "tricks of the trade" as much as anyone.

We hope that these pages, together with other short papers like it, will finally be put together in a printed NORTHEASTERN LOGGERS' HANDBOOK. We are putting it out in this form first because there seems to be an urgent need for this sort of information; and because we need the help and advice of persons who know about logging in our region before printing. We want the experienced logger to tell us what important things we have missed and where our advice is not good. We want the young man going into the woods for the first time to tell us what parts of it he finds hard to understand, to suggest how it can be made more useful to him. We would like the equipment manufacturers to check our recommendations for use of their products and tell us about new devices they are developing.

Please send criticisms, questions and suggestions to: The Director, Northeastern Forest Experiment Station, 614 Bankers Securities Building, Philadelphia 7, Pa. Additional copies of this and other publications in this series can be obtained from the same address.

## SECTION 13: CABLE LOGGING

By Fred C. Simmons \*

Cable systems of logging are not widely used in the Northeast. In the West, high speed cable systems are being discarded in many localities because of their great expense and the damage they do to timber stands. They knock over a lot of timber that is not harvested; and they leave behind a serious fire hazard in logged-over stands. They are dangerous for the men working around them.

However, cable systems are the only way for logging some areas efficiently. These include places that are so rough or swampy that other types of logging equipment cannot be used effectively to get the logs out.

### GROUND SKIDDING

The simplest method of cable logging, of course, is ground skidding. (This has been discussed in Section 11, "Skidding with Tractors".) The winch alone is sometimes used to ground skid logs 30 to 50 feet from the tractor. This is often a forest conservation as well as an economic measure.

On one operation a wheel-type tractor equipped with a winch has been observed bunching small pine logs from slopes ranging up to 100 percent. The operator took his tractor to the brow of a hill and chained the front end to a tree. Then his helper carried out the cable and hooked on the logs; and the power unit pulled them in. They operated over a radius of 75 feet. When a load had been assembled the operator unchained his machine, hooked on to the logs, and dragged them to the mill. This was in open, sandy pine woods.

When the cable runs up over the fairlead of an arch a slight high-lead effect is obtained and logs can be successfully skidded from even greater distances. Several loggers have installed booms of various sorts on their tractors to get the same effect.

Self-loading trucks, or loaders mounted on trucks, are often used in skidding. The home-made jib boom truck described and illustrated in Section 15 has been observed skidding light logs in open woods for distances up to 300 feet.

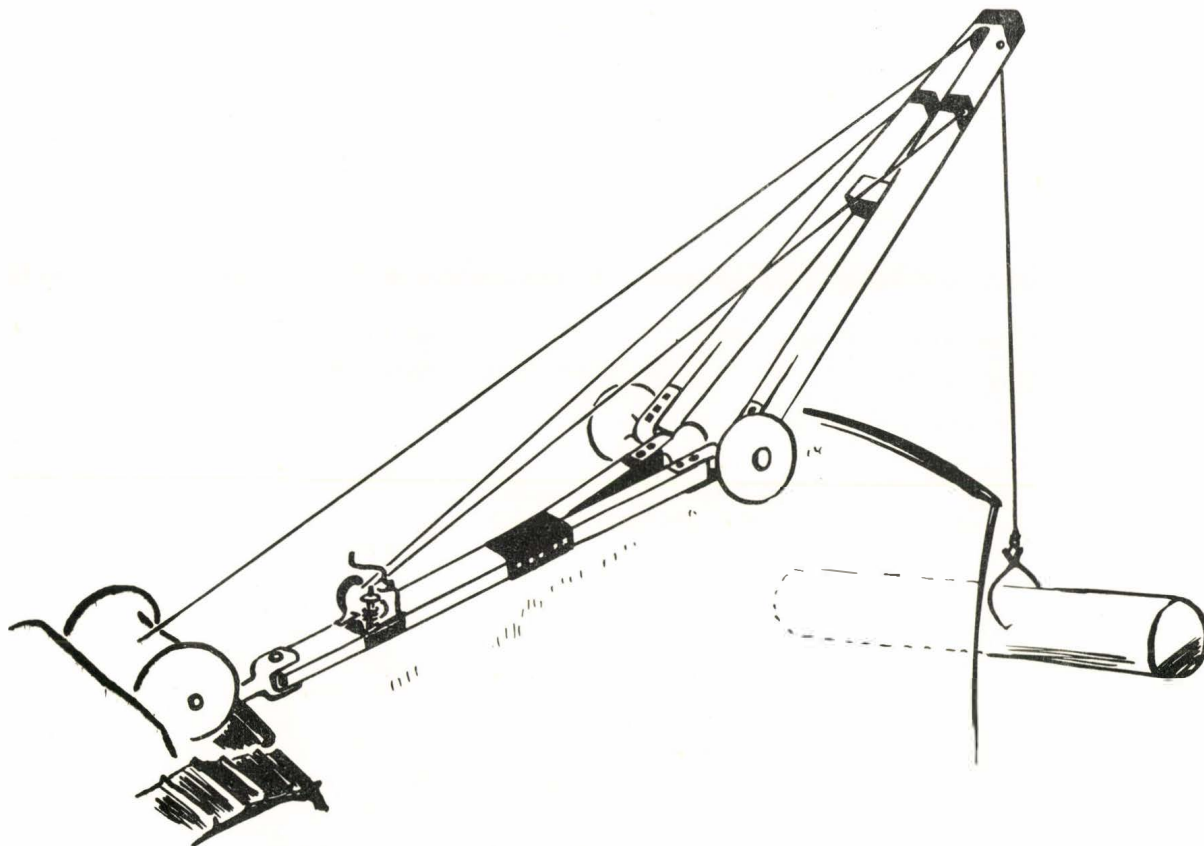
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\* Specialist in logging and primary processing.  
Forest Utilization Service





Tractor equipped with boom

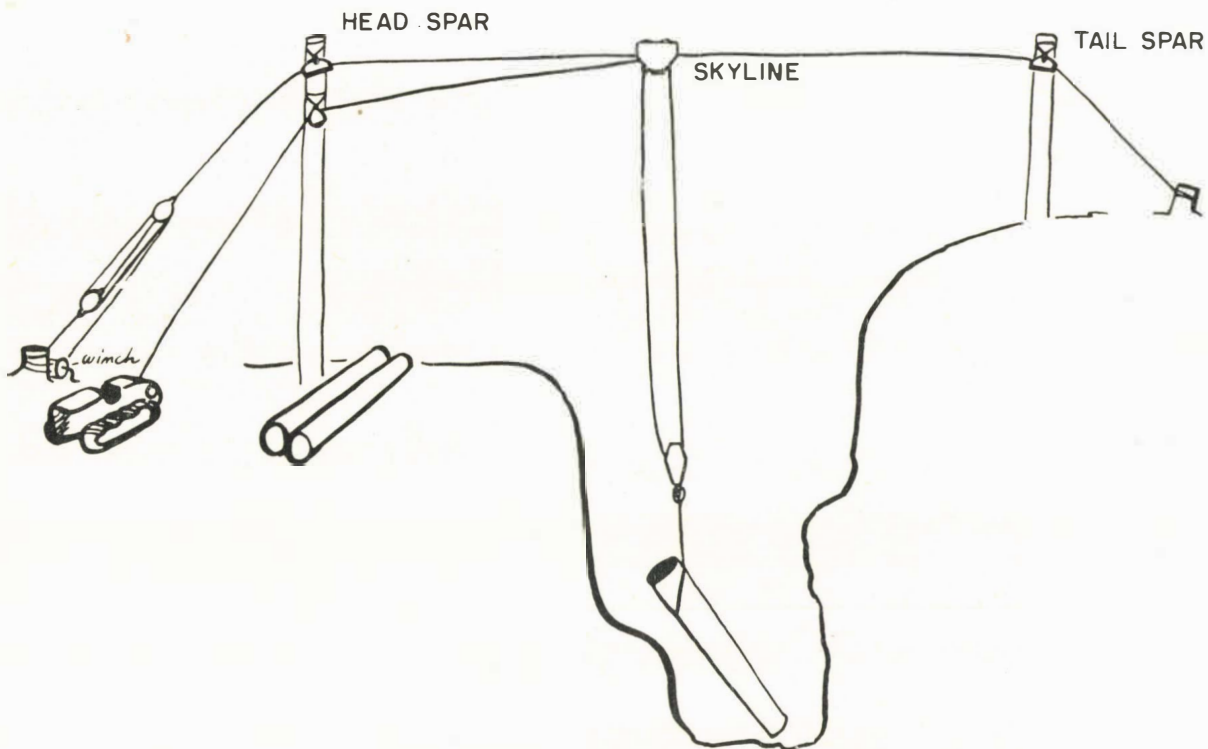


Home-made boom for working over cliff

In working over a cliff, a great deal of wear is incurred on the cable. One way to get around this is to construct a simple boom that can be backed out to the edge of the cliff, to carry the cable over the sharp rock edge. With such a boom logs scaling up to 3,000 board feet have been lifted 60 feet with a 60-horsepower tractor.

### SKYLINE LOGGING

Getting the logs out of a ravine is a tough job. If the sides are steep and rough, the bottom is rough or swampy, and the mouth is blocked, ordinary logging vehicles cannot be used. Such ravines often can be logged best by a simple skyline system like those used in the West.



Logging a box canyon with a skyline

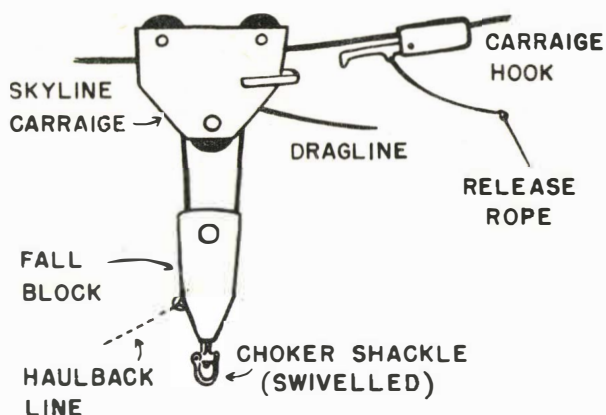
The skyline is stretched across the ravine from a head spar on the landing side to a tail spar on the other side. Neither needs to be very high--in fact, a stump can often be used for a tail spar. The skyline is usually tightened by a block and tackle and hand winch. The main dragline passes through a sheave on the head spar, to a carriage (bicycle rig) suspended on the skyline, down through a fall block, and back to the skyline carriage where the end is fastened. Motive power is frequently provided by a large-capacity winch on the



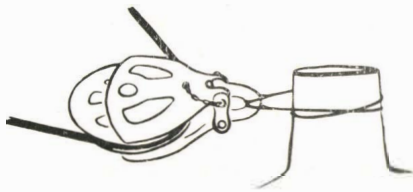
back of a tractor set well back from the cliff edge. When the winch is put into free wheeling or reverse, the dragline cable pays out until the carriage is at the center of the skyline, and the heavy fall block carries the choker shackle down within reach of the hookup men at the bottom of the ravine.

When the log is hooked on they give the winch operator a signal. He puts the winch into gear, and the log is lifted up and out of the canyon. An automatic hook (which can be released by a rope by the winch operator) on the skyline near the spar tree makes it easy to hold the carriage and lower the log at the

landing on top of the cliff.



Tractor with double-drum winch

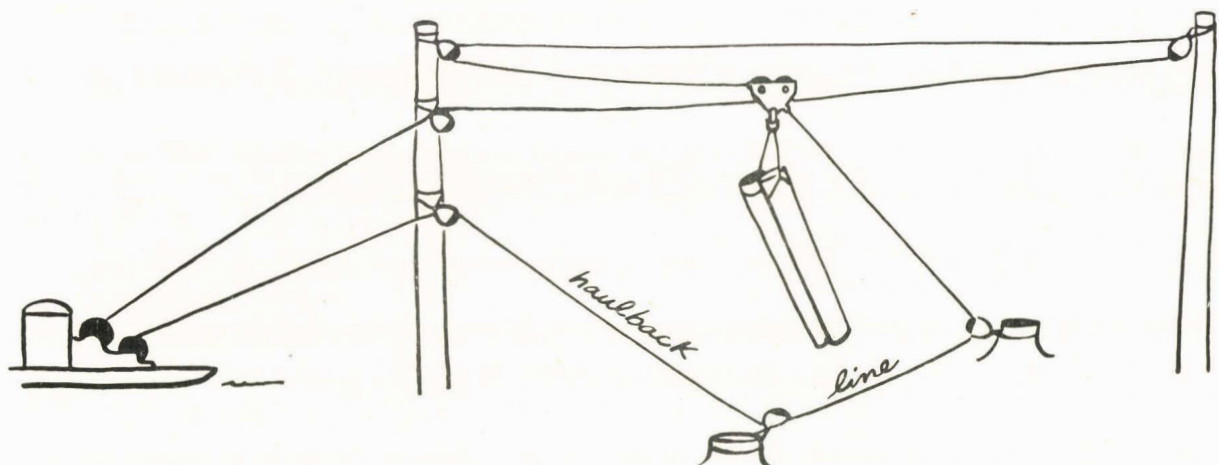


Haulback block

If a double-drum winch can be provided, a light haulback line will speed up the operations by providing quicker, surer return of the fall block to the hookup man. The haulback line (in the Northeast it can usually be 3/8-inch cable) is run from the fall block, through a light haulback block attached to a stump at the bottom of the ravine, and up to the second winch. Additional haulback blocks can be used if needed. These haulback blocks are arranged with an easily removed shackle so that they can be taken off the line, moved, and reattached in a very short time.

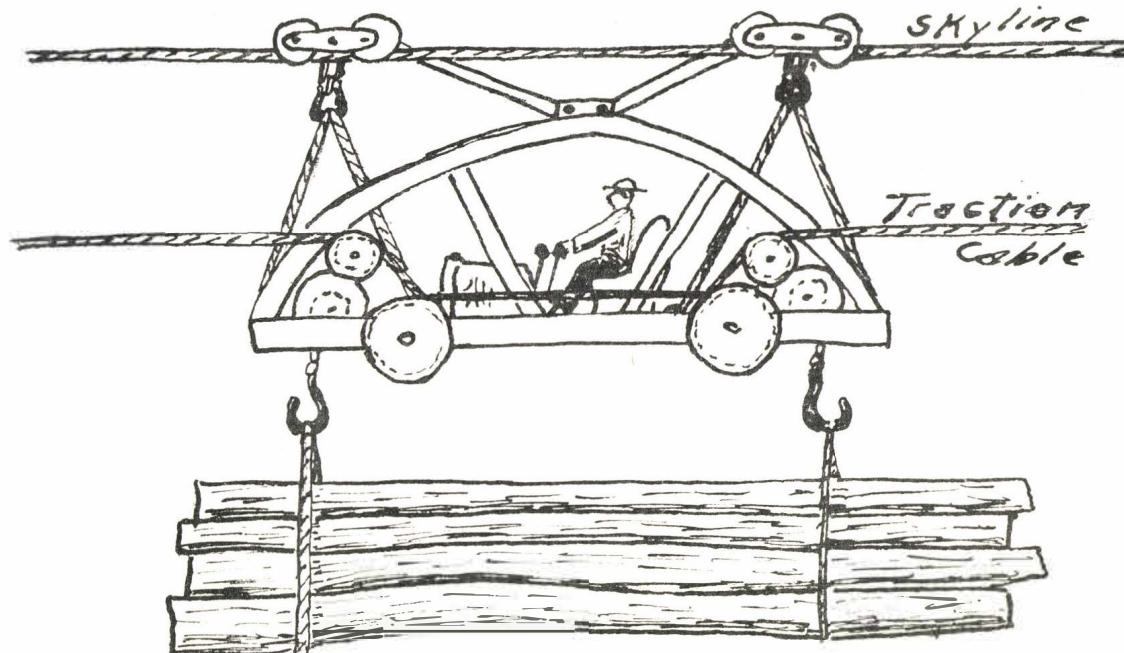
There are many variations of the skyline system. A number of them are described in U. S. Department of Agriculture Bulletin 711, "Logging in the Douglas Fir Region", in West Coast trade journals, and in the catalogs of equipment manufacturers.

The recently developed Dunham system may interest northeastern loggers. In this system the main dragline is also the skyline. It is doubled back so that the carriage runs on it. This system could not be used without a haulback. When the haulback is restrained and the main dragline is hauled in, the carriage and its load are lifted into the air.



Dunham system of skyline logging

Newer still is the "Skyhook". In loggers' language a "skyhook" has always been an imaginary device that loggers would like to have when nothing else works. The new commercial "Skyhook" is a self-propelled carriage suspended from two steel cables. The operator rides in the carriage, which pulls itself along by means of a traction cable. Power-driven winches at the front and back of the machine hoist up bundles of logs, and the Skyhook moves them along the skyline.



Skyhook

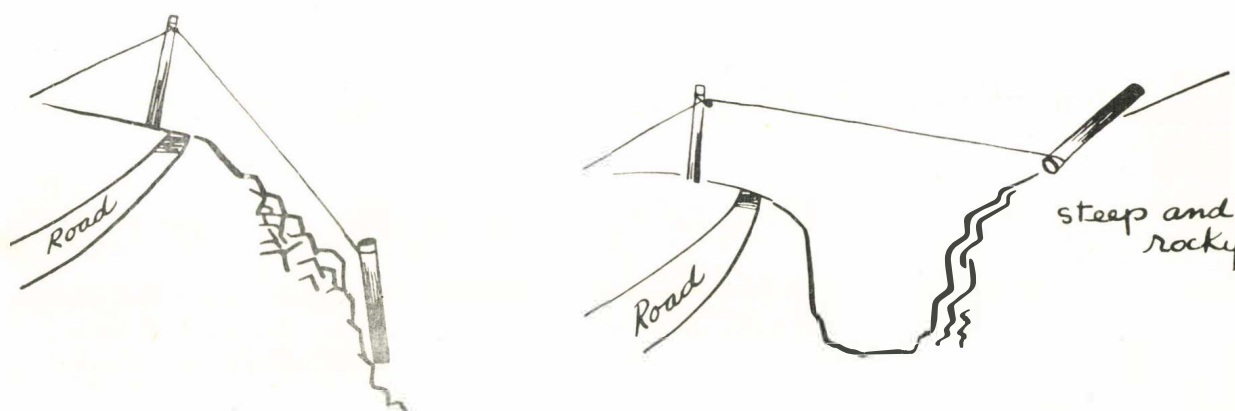
This is a diagram of a small skyhook that was recently installed to bring logs out of the Carolina swamps--over a span of 4,000 feet. Seven guyed spar trees are used; special devices support the cables so that the carriage can run past the spar trees.

The inventor and the manufacturer of the Skyhook claim that the machine needs less power to transport logs over long spans than more conventional skylines do. They also claim that the operator has better control and closer communication with the men on the ground; that selective logging is more practical; and that there are fewer accidents. There are probably not many places in the Northeast where the Skyhook will be needed.



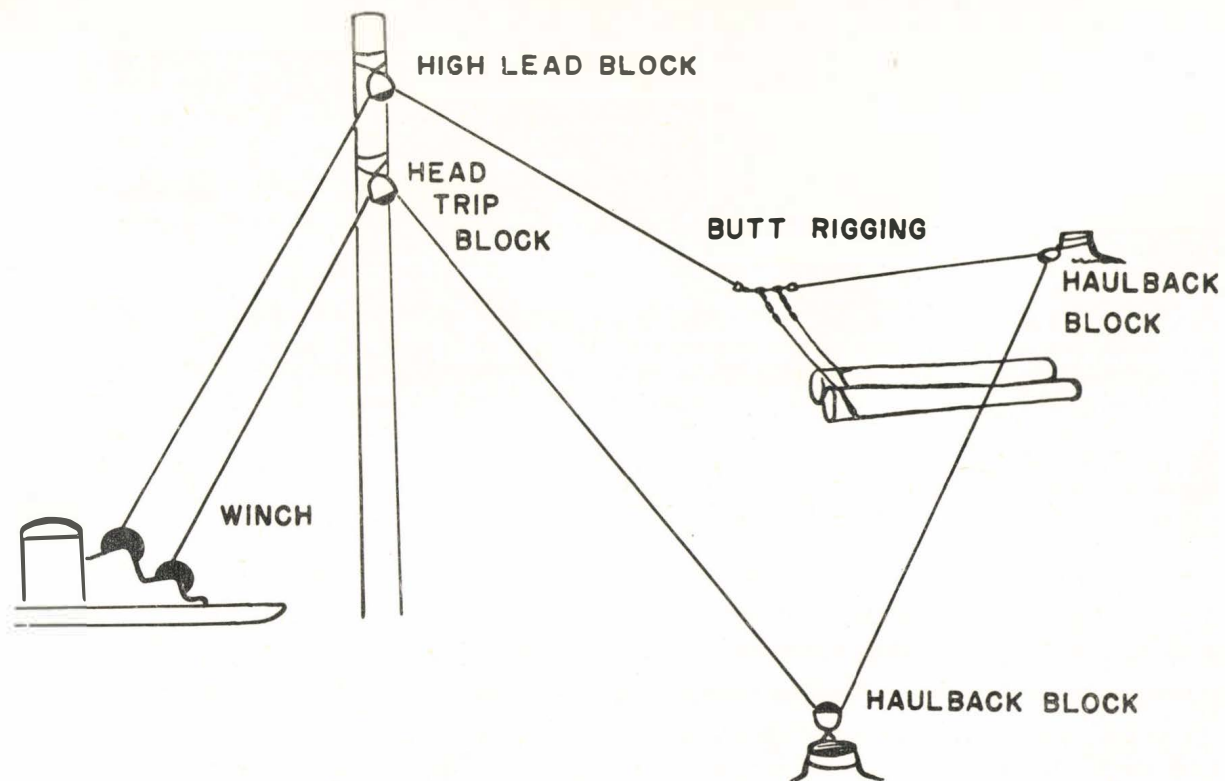
## HIGH-LEAD SYSTEMS

High-lead logging was first developed in the Carolina swamps, and has been used on a number of Northeastern jobs. With the development of tractor logging, however, it is needed even less in the Northeast than skyline systems. The swamps are usually frozen and easy to get at in the winter. There are few slopes on which tractors cannot be used. But, there are some places where a high lead is the best way for getting the logs out. A typical example is a rocky hillside with a road at the top. Another is where there is a steep-sided gully between the landing at the roadside and the opposite slope where the logs are located.



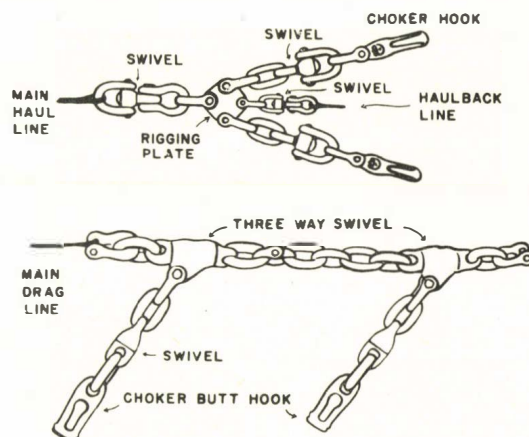
Two locations for high-lead logging

The principal advantage of the high-lead is that it lifts the front ends of the logs; this helps them to pass over rocks, stumps, and other obstructions. This advantage disappears as the length of the skid increases. With a 40-foot spar in level country a high lead can skid logs efficiently about 200 feet. A 60-foot spar would extend the distance another 100 feet. On uphill skids the distance will be a little more, depending on the configuration of the ground; and on downhill skids it will be much less.



A simple version of a high-lead system

An important part of a successful high lead is the butt rigging used. It should be fitted with swivels to reduce possibilities of kinking the wire ropes attached to it.



Two types of butt rigging

It is worth repeating that in all cable logging it is economy in the long run to purchase real logging blocks and commercial wire-rope fittings. A local blacksmith cannot handle the high-grade steels needed for good service in such equipment. The makers of logging blocks have put into their product the result of years of experience. On the job such a block will more than pay for itself with longer life--both of the block itself and the wire rope used with it--fewer breakdowns, and fewer accidents. The names of several of the manufacturers of such blocks are listed at the end of this Section.

Also given are the names of a number of manufacturers of complete yarders. Many of them are now making sturdy little two-drum machines, some of them complete with a telescoping steel mast. The smaller machines are usually powered with standard gasoline or diesel motors, for which parts and service can be readily obtained. A new development is the use of special torque-converter (fluid) drives to give the yarder a greater capacity for overloads; they make for smoother operation, and make breakdowns less likely. Western donkey-punchers say that these torque converters have at last given the internal combustion engine flexibility and ability to take punishment as well as the old steam engines did. They also make it possible to use smaller motors than could be installed with direct mechanical drives. Many of these yarders can also be used as loaders, and they might be a very worthwhile addition to the equipment on some eastern operations.



Commercial yarder



For loggers who want to assemble their own cable-logging equipment the manufacturers of several varieties of winches and hoists are also listed. Some are adapted to installation on tractors and trucks, others to hookups with independent motors. One especially flexible type is designed to be operated by the jacked-up rear wheels of the truck it is mounted on.

### Safety in Cable Logging

As indicated in the introduction to this Section, cable logging is dangerous business at best. This applies to simple ground skidding over short distances, and even more to high-lead and skyline systems.

There are many things that can be done to make cable skidding safer than it has been in the past. One is, of course, proper selection and care of the wire rope and wire-rope fittings used. This subject has been covered in considerable detail in Section 12 of this Handbook.

Another is the general use of modern wire-rope chokers rather than tongs or loops of chain to pick up the logs. The chokers should be equipped with Bardon or other self-locking hooks. With these devices there is a much more positive grip on the log--it is much less likely to come loose as it swings through the air.

A third, and tremendously important, safety factor is a positive and well understood signal system between the choker setters and the winch operator. On some settings where the two men are not too far apart, a system of shouts or arm signals can work very well. Even here, however, there should be a readily available emergency signal such as a penetrating and unmistakable whistle at both ends of the line. Too many men have been seriously injured or killed by premature starting of the winch, or failure to stop immediately when an emergency occurs.

### Some Makers of Logging Blocks

Berger Engineering Works, 3236 16th Ave., S. W., Seattle 4, Wash.  
Lamb-Grays Harbor Co., Hoquiam, Wash.  
Mallory Logging Equipment Co., 133 S. W. Pine St., Portland, Ore.  
Paul E. Keeney Co., Weatherly Bldg., Portland, Ore.  
Skookum Co., 8504 N. Cramford St., Portland, Ore.  
Washington Iron Works, 1500 Sixth Ave. South, Seattle 4, Wash.  
Young Iron Works, Seattle 4, Wash.

### Commercial Yarders and Skidders

Berger Engineering Works, Inc., Seattle 4, Wash.  
Blair Equipment Co., P. O. Box 365, Ottawa, Canada.  
Clyde Iron Works, Inc., Duluth 1, Minn.  
Lidgerwood Co., Elizabeth, N. J.  
Pointer-Willamette Co., 238 N. E. Oregon St., Portland, Ore.  
Skagit Steel and Iron Works, Sedro Woolley, Wash.  
Taylor's Machine Works, Louisville, Mississippi.  
Washington Iron Works, Seattle 4, Wash.

### Winches and Hoists

Blair Equipment Co., P. O. Box 365, Ottawa, Canada.  
Braden Winch Co., Tulsa, Oklahoma.  
Dobbie Foundry and Machine Co., Niagara Falls, N. Y.  
Dorsey Brothers, Elba, Alabama.  
Erie Hoist Co., Erie, Pa.  
Gar Wood Industries, Inc., 7924 Riopelle St., Detroit 11, Mich.  
Isaacson Iron Works, Seattle 14, Washington.  
Pacific Car and Foundry Co., Renton, Washington.  
Sagsen Derrick Co., 3101 Grand Ave., Chicago, Ill.  
Silent Hoist, Winch and Crane Co., 841 63rd St., Brooklyn, N. Y.  
Stimmel Winch Co., 37-24 33rd St., Long Island City, N. Y.  
Tulsa Winch Manufacturing Co., Tulsa 3, Oklahoma.  
Wilamette-Hyster Co., Peoria, Ill.  
Van Zale Electric Co., Bay City, Michigan.